Claims

1. .A composition for deposition of a ZnS/Zn(O,OH)S film on a substrate comprising:

a zinc salt;

a source of sulfur;

an amine; and

a solvent comprising at least a portion of a non-aqueous material;

wherein the composition is deposited by a deposition process onto the substrate.

2. The composition of claim 1 wherein the solvent is at least partially composed of an alcohol.

3. The composition of claim 2 wherein the alcohol is selected from the group consisting of methanol, isopropanol, triethyl amine and mixtures thereof.

4. The composition of claim 3 wherein the solvent contains at least 1% methanol.

5. The composition of claim 4 wherein the non-aqueous/aqueous solvent contains at least 31% methanol.

6. The composition of claim 4 wherein the solvent contains 100% methanol.

7. The composition of claim 1 wherein the composition is deposited by chemical bath deposition.

8. The composition of claim 1 wherein the composition is deposited by spray deposition.

9. The composition of claim 1 wherein the amine is ammonium hydroxide.

10. A method for depositing a ZnS/Zn(O,OH)S film on a substrate comprising:

combining a zinc salt, an amine, and a sulfur source in a solvent comprising at least a potion of an organic material wherein the resultant solution is contacted to the substrate to fabricate a ZnS/Zn(O,OH)S film on the substrate.

11. The method of claim 10 wherein the contacting step is accomplished by spraying.

12. The method of claim 10 wherein the contacting step is accomplished by dipping.

13. The method of claim 10 further comprising cleaning the deposited ZnS/Zn(O,OH)S film with ultrasound.

14. The method of claim 10 wherein the ultrasound is performed on the ZnS/Zn(O,OH)S film for between ten and sixty seconds.

15. The method of claim 10 wherein the ultrasound is performed during the deposition of ZnS/Zn(O,OH)S film.

16. The method of claim 10 wherein the contact is performed once.

17. The method of claim 10 wherein annealing is performed of the deposited ZnS/Zn(O,OH)S layer.

18. The method of claim 10 wherein annealing at 200°C for 10 minutes is performed on the deposited ZnS/Zn(O,OH)S layer.

19. The method of claim 10 wherein as deposited ZnS/Zn(O,OH)S layer was used for final junction formation.